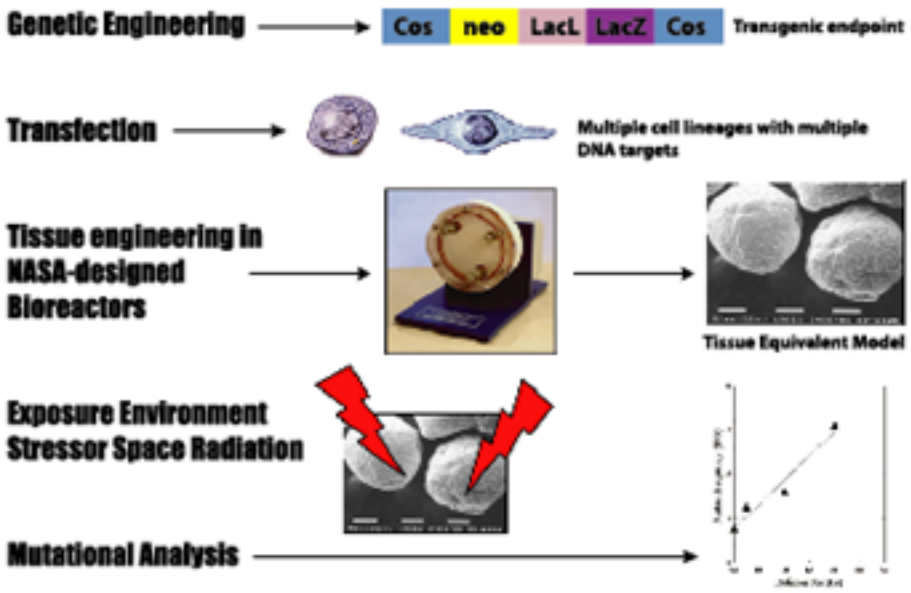
:: BIOTECHNOLOGIES ::

THREE-DIMENSIONAL TRANSGENIC MAMMALIAN MODELS FOR SPACE MUTATION ASSESSMENT

Overview



Research Impact

Tissue equivalent models with multiple identical DNA targets.

Three dimensional tissue models do a better job of modeling the dynamics of the *in-vivo* environment when compared to cell models.

Many anchorage dependent mammalian cells depend on their three-dimensional environment for cell-cell communication.

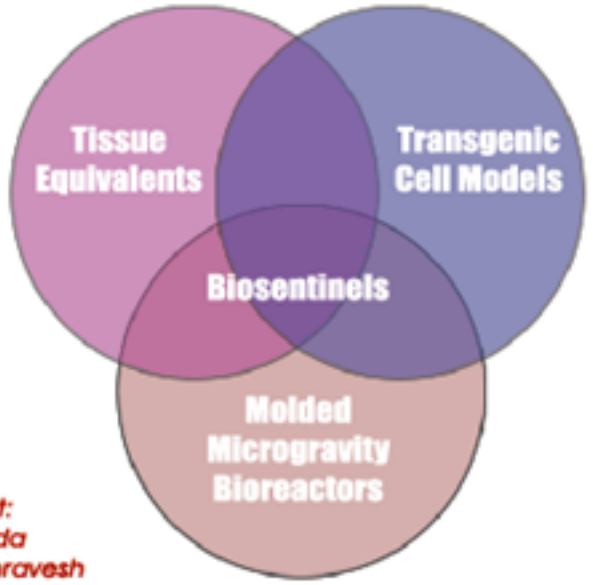
Mutational analysis can be used as a fundamental effect of environmental stressors.

Gonda, S.R., Wu, H., Pingerelli, P., Glickman. Three-dimensional Transgenic Cell Models to Quantify Space Genotoxic Effects. Advances in Space Research. 27 (2): 421, 2001.

NASA Significance

Basic research on cells and tissues can be used as a method to test the impact of long term space flight and extend the outer limits of manned space flight. The use of transgenic targets can enhance the signal and automate data acquisition to enable unmanned research missions to test the effect of various space associated environmental stressors without risk to man. Three-dimensional tissue-like models containing human cells with a high density of genetic targets for assessment of low-dose, high energy ionizing space radiation effects is a significant advance in bioreporter systems for space application and extrapolation of effects to astronauts.

Project Interactions



Points of Contact:
Dr. Steve R. Gonda
Dr. Esfandiar Behravesh